

Campus Sprinkler System/Irrigation Project

Contact Information

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Introduction and Description

The 8th grade students at Monte Vista Middle School wanted to enhance the campus and show a little pride in their school community. Originally the students wanted to plant flowers and shrubs around the campus but discovered that the planting areas did not have a way of delivering water to the plants and flowers. The students discovered that they had to solve the second problem before completing the first one. The students decided that they wanted to design and install a sprinkler system so that future plants had a chance to survive.

Throughout the entire process, my students wrote short reflections. This part became the most educational and important part for me. Their responses guided my view of the project, and let me know where clarifications and improvements would improve instruction. They also provided an area for students to pose questions that they are otherwise too embarrassed to ask in front of the class.

Service-learning proved a very valuable learning experience for both my students and me. We placed an emphasis on civic responsibility, but also learned a little more about how science relates to everyday life and a lot about us!

California State Academic Content Standards

7th Grade Science

5a, 5b, 7a, 7b, 7c, 7d

8th Grade Science

2a, 6a, 6b, 9b, 9c

8th Grade Language Arts

Writing 1.0

Listening and Speaking 2.0

Action

To ensure that the service will be high quality, it was necessary to prepare the students for the actual activity. The students researched different types of irrigation and sprinkler systems to decide on one that would best suit the area and budget. The students used note taking skills, book and internet research, diagrams of sprinkler systems, and sample blueprints to help design their own system. To help fund the project students wrote to

various businesses to explain the project and ask for a donation of sprinkler supplies and tools needed to complete the job.

The students would sketch outlines of the sprinkler system in detail. The students researched the different types of pipes, sprinkler heads, systems, and the effects of water pressure on sprinklers. The students also researched how to design a system and the construction of the sprinklers.

Students participated in the activity individually and in groups. Students took on different roles within the project: all researched in some capacity; a group of students volunteered to be the typists and created a page template on the computer; Most of the work on the blueprint took place during the science class (about 45 minutes each day). Some students were so enthused about the project that they came in to work on the sprinklers during lunch and break.

When all systems and blueprints were gathered from the different groups, the students helped organize all of the designs and then discussed the systems to decide the best one that would suit the needs of our planers. When a final design and system was decided on all of the groups drew their own blueprint and design. The final copies were used to start the construction of the project.

Reflection

The students decided on a need for the school, once they agreed upon a need, then they had to reflect on how it might affect the school. The students then created a KWL chart and filled in the first part of it. Every week, as a class, they reviewed what has occurred in order to ensure that all students remain up to date and fully understand the activity's progression. Allow selected students to verbally reflect on what they have experienced and learned. At the end of the week, students reflect verbally and in their journals. As they learn more about the importance of their senses and individual learning needs, refer back to the KWL chart and complete it.

We had a huge discussion about the impact they made on their community and what they learned from this service-learning project. We discussed what was fun for them, what was difficult, if they would like to do another service-learning project again, etc. They also did some journal writing on it.

The students were asked some of the following journal writing questions throughout the project:

- What laws apply to the distribution of fluid pressure throughout a closed system?
- How did you devise a scale for you drawings?
- How did you know how many sprinkler heads you had to use and where to put them?
- Talk about how this project seems different to you than other projects.
- Would you like to be involved in the actual planting when the system is installed?
- Tell me about how the group works together. Is everybody contributing? Do things need to change?

- Do you feel differently about your school now that you have helped rebuild some areas?
- What is the most surprising thing you learned while working on the project?

Student Assessment

Students will be assessed through informal and formal observations during class time. Informal observations consist of teacher circulating, observing, and asking questions during class time. Students will also be assessed based on the quality and accurateness of their field notes, research notes, and final product. Group effort and cooperation will also be assessed. The written reflections and project logs were the secondary assessment tools. Students completed self-evaluations halfway through the project and again at the end.

Project Evaluation and Expansion

Immediate evaluation will be based on the accuracy of the facts contained in the blueprints and water pressure calculations (pressure and the number/type of sprinkler heads). The project will also be evaluated on the quality and precision of the drawings used on the blueprints. The overall quality of the service-learning activity will be evaluated by the students themselves, parents, and classrooms that see the flowers and sprinklers. Their feedback would serve as the primary basis for evaluation, as well as for future improvements to other flower boxes/gardens. Evaluation of this project cannot be immediate; plant growth and sprinkler/water delivery over a sustained period of time needs to be seen in order for the students to know and understand its impact.

Celebration/Public Recognition

This success of this service project was celebrated in several ways, some of which involved public recognition of both the service and the accompanying learning. These included:
Presentations to the staff, other students noticing sprinklers going off, the flowers starting to bloom.

Materials and Staff Development Needs

Students required the use paper, graph paper, fine line black drawing pens, rulers, calculators, internet access and research books, sample blueprints, and colored pencils/crayons. The staff was not required to contribute, except for the supervising teacher to help the kids stay on track.

Funding and Resource Support/Sustainability

Start up funding for paper, printing, supplies came from the general classroom budget, etc. Sprinkler parts came from generous donations from various businesses and parents. Project requires little to sustain itself once completed occasional maintenance and the replacement of parts may be required.

Sprinkler Project Grading

Name _____

Assignment	Points Possible	Points Achieved
Reflection #1	5	
Research: source #1	10	
Reflection #2	5	
Research: source #2	10	
Blueprint rough draft	10	
Reflection #3	10	
Blueprint final draft	10	
Reflection #4	5	
Actual installation	20	
Reflection #5	5	
No leaks in the system	10	

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A Service Learning Project

Lesson Plan Profile

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Abstract

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Degree of Complexity for Implementation

High

Educational Setting

Educational Institution

Public

Comprehensive Schools

6-8

Alternative Settings

Resource
Special Day

School Schedule

Traditional 9 month

Overview of Service

Level of Service

Direct Service

Service Issue Area

Education

Science

Environmental and Social Needs

Duration of Service Activity

Long Term (9 sessions)

Specific Service Activity Areas**Educational**

Teaching Activities

Tactile Activities

Lesson Content**Subject Area(s)**

Environment

Science

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8th Grade Science 2a, 6a, 6b, 9b, 9c

8th Grade Language Arts Writing 1.0 Listening and Speaking 2.0

Collaborating Partners**Individual Partners**

Friends

Reflection

Journals

Blueprint presentation

Oral presentation

The water being delivered